Appendix C
Riffle Modifications

Riffle Modification

The design parameters, such as depth, velocity, and gravel size, for spawning habitat in the Robinson Reach was developed by examining existing habitat suitability studies for the lower Merced River. To experiment with enhancing other hydraulic characteristics that may attract spawning salmon, six of the twelve constructed riffles in the Robinson Reach were manipulated by piling gravel to form one, two or three uniform humps at set intervals along the riffle's length. Figure 2a - 2d depicts the designs of the riffle/spawning areas constructed along the Robinson Reach. The features were constructed to induce transitions in depth and velocity, and increase intragravel flow, upwelling, and downwelling. It is assumed that functionally equivalent features would form naturally over time on constructed riffles that are initially flat and homogeneous, given that the correct channel form and substrate are present. However, a flow event significant enough to create features that improve a constructed riffle's potential as salmon spawning habitat may take years to occur because of controlled releases from the system of dams upstream of the project reach, and the need for consecutive years of normal or above normal precipitation.

Excerpted from the Draft Proposal "Study of Use by Chinook Salmon of Spawning Habitat on the Merced River, Robinson Reach" by California Department of Water Resources, Environmental Services Office 2002. For more information contact Aric Lester, Environmental Scientist for DWR, ESO.

Figure 2b

Longitudinal Profile and Planform of Spawning Area Design "B"

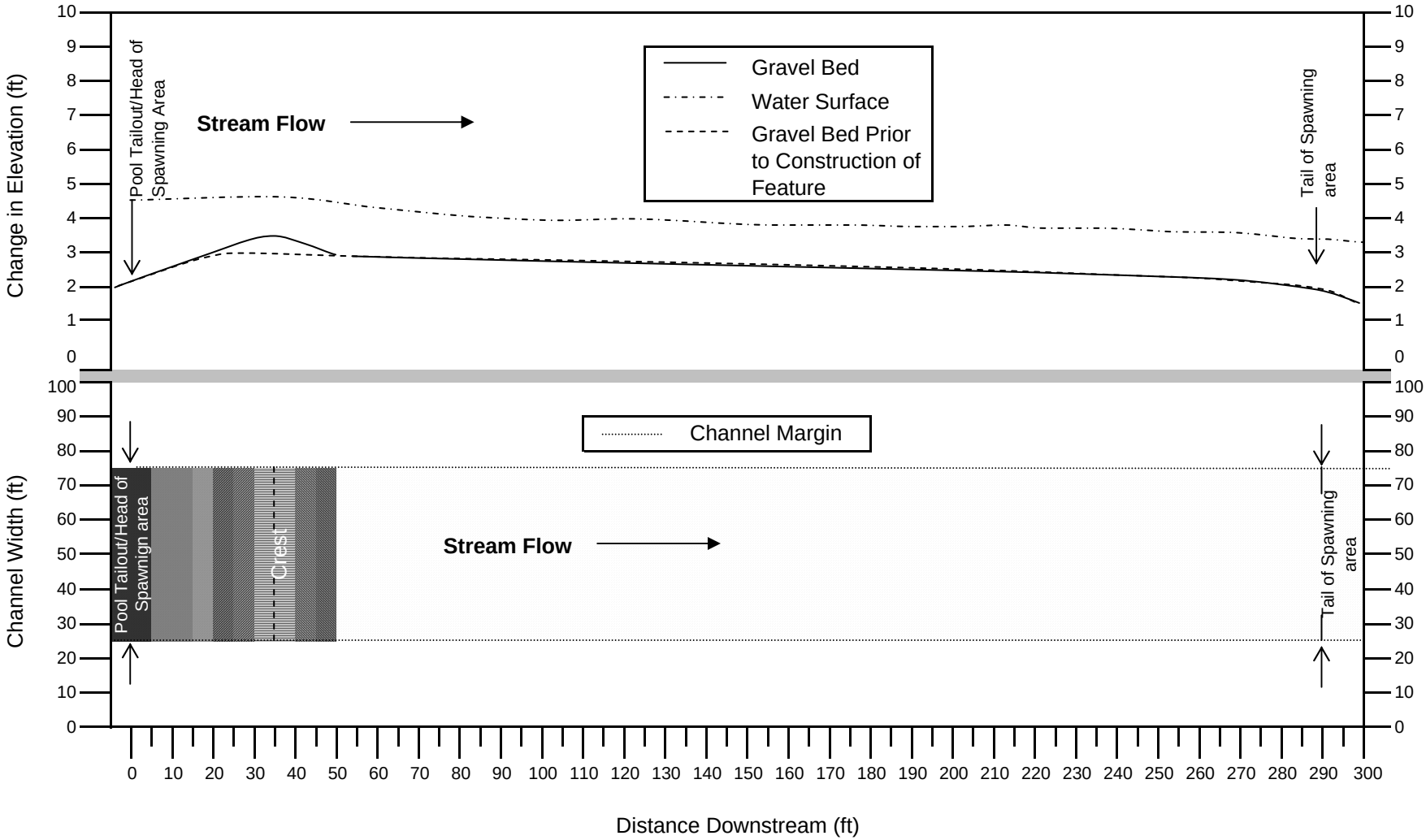

Figure 2c

Longitudinal Profile and Planform of Spawning Area Design "C"

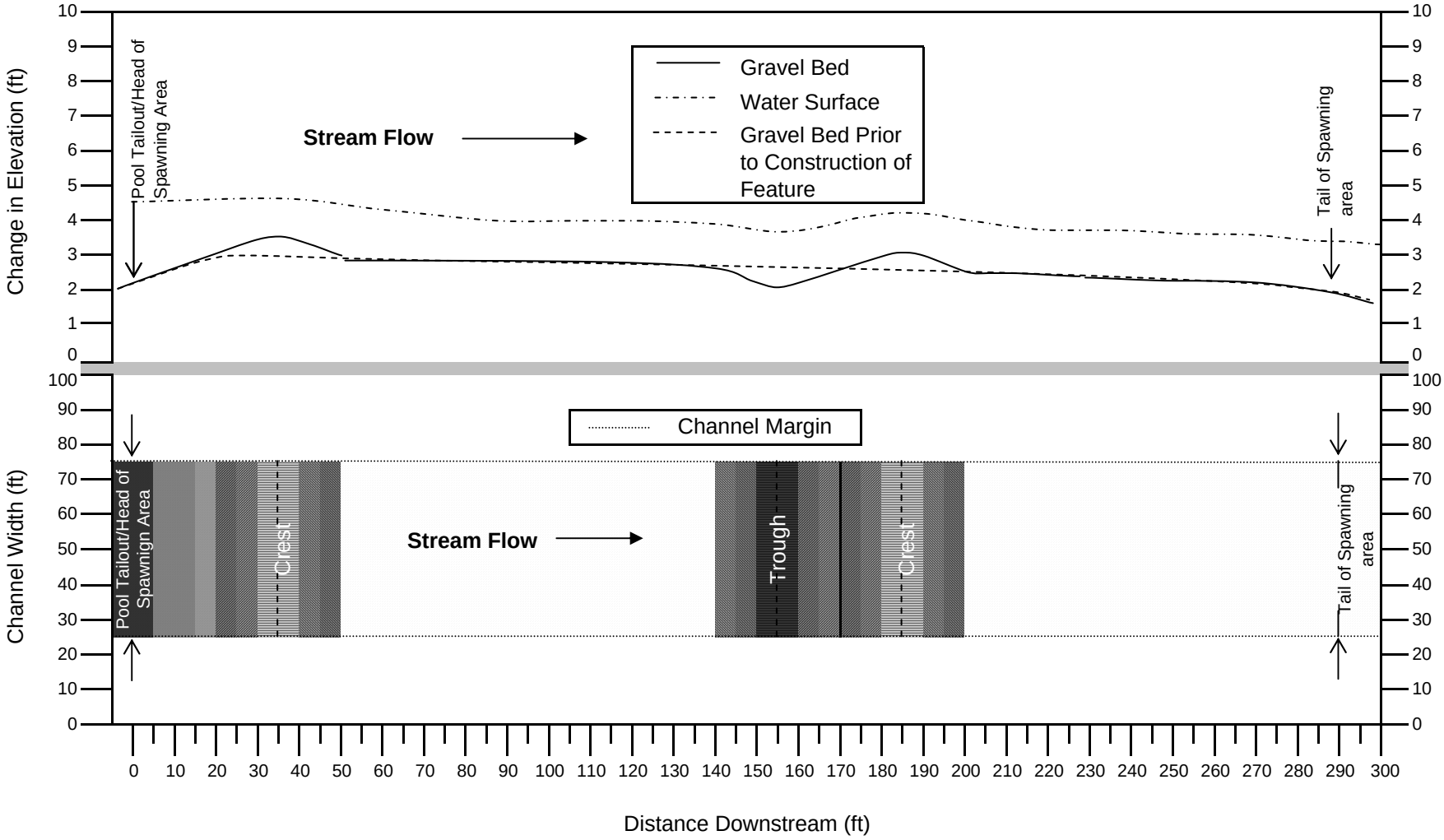

Figure 2d

Longitudinal Profile and Planform of Spawning Area Design "D"